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PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Physical Culture Apparatus

I, PAUL FRANÇOIS GALLERET, of 101, rue de Tourneville, Le Havre, France, French Nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to physical culture apparatus, its object being to provide an improved construction which advantageously replaces the present "exercisers" of known kind and which can likewise be adapted for use as a rowing machine.

According to the present invention, the physical culture apparatus is characterised in that it comprises a perforated piston secured to the lower end of a stationary piston rod which is secured by its upper end to a supporting structure, a fluid-containing cylinder with a closed lower end co-operating with said piston and adapted to slide vertically thereon, and a manually-operable cable and pulley arrangement connected to said cylinder and adapted, when said cable is pulled, to displace said cylinder in the upward direction, the subsequent descent of said cylinder taking place under the effect of its own weight when the pull on said cable is released.

The apparatus may further comprise a track pivotally connected by its front end to the lower end of said supporting structure so as to be pivotable from a horizontal operative position to an upright inoperative position substantially parallel with said supporting structure, releasable means for securing said track in said inoperative position, a rowing seat adapted to move on said track, resilient means urging said rowing seat towards said front end of the track, and a foot rest on said track, adjacent the front end thereof.

To vary the force required to operate the apparatus there may be provided a spindle rotatably mounted in an axial

channel formed in said piston rod, a plate secured to the lower end of said spindle and underlying the central part of said piston, vertical guide rods depending from said plate, a shutter plate vertically slidable on said guide rods and adapted, in its upper position, to close a portion of the perforations of said piston, which portion is variable according to the angular position of said shutter plate with respect to said piston, and a handle secured to the upper end of said spindle for adjusting the angular position of the said shutter with respect to said piston.

The passage of the liquid from one part of the cylinder to the other, in one direction, is brought about by the pull exerted by the user on the cable, whilst the passage of the liquid in the other direction is brought about by the weight of the cylinder urging it downwardly.

When the apparatus is used as a rowing machine, the user grasps the pulling handle of the cable at arms length while the feet press on the foot rest with the legs in knees-bent position, in such a manner that by pulling on the handle to bring it up to his chest, the user performs one part of the total work required to move the cylinder, the other part being obtained by drawing back the seat by extension of the legs whilst holding the handle to the chest.

When the horizontal frame is in its raised stored position, the apparatus can still be used as an exerciser.

The annexed drawings show, by way of example, a form of construction of the apparatus which is usable either as an exerciser or as a rowing machine.

Fig. 1 shows schematically one form of construction of the apparatus with the hydraulic cylinder in section.

Fig. 2 is a side view of the apparatus.

Fig. 3 is a view in plan and section along line III—III of Fig. 2.

Fig. 4 is a section along line IV—IV

[Prio

of Fig. 2 viewed in the direction of the arrows.

Fig. 5 is a section to a larger scale of the piston of the hydraulic cylinder provided with its closure and controls for the latter.

Fig. 6 is a section on the line VI—VI of Fig. 5 viewed in the direction of the arrows.

Fig. 7 is a perspective view of the assembled apparatus.

As can be seen in Fig. 1, the apparatus according to the form of construction which will be later described in detail, comprises principally, a hydraulic device composed of a cylinder 1 and a piston 2, the piston being fixed and the cylinder movable and coupled to a handle on which the user exerts a pull causing a rise of the cylinder and the passage of the liquid from below to above the piston, the cessation of the pull permitting the descent of the cylinder under the effect of gravity, and the inverse movement of the liquid.

In practice, the apparatus could be constructed as shown for example in Figs. 2 to 7.

In this form of construction, the cylinder 1 is guided between two vertical members 3 coupled at their tops by a tie bar 4 and a little lower down by another tie bar 5 to which is attached the upper extremity of the rod 2a of the piston 2.

The members 3 are fixed, at their base, on girders 6 joined by a tie bar 7 at the middle of which rises another member 8 which at its upper part is assembled to a tie bar 9 perpendicular to the tie bar 4. To this tie bar 9 is fixed a shackle 10 in which are mounted guide pulleys 11 and 12 for a cable 13 which, starting from a point 14 of the cylinder passes round the said pulleys and then descends again to pass round another pulley 15 mounted in a shackle 16 at the upper part of the cylinder, then goes up again to pass round a fourth pulley 17 carried by a shackle 18 and redescends to pass round a last pulley 19 mounted in a shackle 20 which can turn about within a small angle on a vertical pin 20' supported by a stirrup 21. This latter is fixed to the members 3 and its sides are extended behind these members where they are joined by a tie bar 7'. The cable terminates in the pulling handle 22 of any appropriate form but preferably formed in such a manner as to permit grasping in both hands.

It is to be understood that this system of cable and pulleys equivalent to a multiple reduction pulley block is not indispensable.

The piston 2 (see Figs. 5 and 6) com-

prises two series of perforations respectively 23 and 24. During the rising movement of the cylinder, the perforations 24 are closed by a closure 25 which can slide on guide rods 26. Advantageously, these rods are carried by a disc 27 fast to a central axle 28, which passes through the tubular rod 2a of the piston, and ends at its upper part in a handle 29 permitting the turning at will of the said closure, and thus, the adjustment of the effective section of the perforations 23, which determines the pull necessary to raise the cylinder.

When the effort of pulling ceases, the cylinder descends again under the effect of its own weight, the closure 25 slides on its guide rods 26 and uncovers the large perforations 24, which permits the cylinder to descend rapidly. Consequently, this arrangement permits a greater frequency of pulling movements on the handle 22. A spring 2r absorbs the shock at the end of the descent.

The apparatus such as has been described, and which could be limited to this construction, functions as an exerciser. It could however be completed in such a manner as to function as a rowing machine also.

For this, there can be provided, at the foot of the apparatus beyond its supporting base, a horizontal frame formed principally of two members 30, joined by a tie bar 31, on which can move, by means of rollers 32, a seat 33 which is normally maintained by a spring 34 in a rest position in which, when the user takes his place, he is in a position to grasp the handle 22. In front of this seat there is a foot rest 35. The user, being seated on the seat with his knees bent and with his feet pressed on the bar 35, pulls on the handle 22 in such a manner as to bring it up to his chest, by which means he brings about one part of the rising travel of the cylinder 1; then he stretches his legs in such a manner as to push the seat 33 backwards whilst keeping the handle 22 against his chest thus causing the remainder of the rising travel of the cylinder.

Advantageously, the tie bar 31 is articulated at 36 with members 6 of the base of the apparatus in such a manner that the assembly of the horizontal frame supporting the seat 33 can be lifted up vertically into the position shown in dotted lines in Fig. 2. To assure its retention in this position, there can be provided, at the extremities of an upper tie bar 37 spring grips 38 which can receive and grip the members 30. It should be noted that in this position, the apparatus can also be used as a simple exerciser.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An apparatus for physical culture, characterised by the fact that it comprises a perforated piston secured to the lower end of a stationary piston rod which is secured by its upper end to a supporting structure, a fluid containing cylinder with closed lower end co-operating with said piston and adapted to slide vertically thereon, and a manually operable cable and pulley arrangement connected to said cylinder and adapted, when said cable is pulled, to displace said cylinder in the upward direction, while the descent of said cylinder takes place under the effect of its own weight when the pull on said cable is released.
2. An apparatus as claimed in claim 1, characterised in that it comprises a track pivotally connected by its front end to the lower end of said supporting structure so as to be pivotable from a horizontal, operative position to an upright, inoperative position substantially parallel with said supporting structure, releasable means for securing said track in said in-

operative position, a rowing seat adapted to move on said track, resilient means urging said rowing seat towards said front end of the track, and a foot rest on said track, adjacent said front end thereof. 35

3. An apparatus as claimed in claim 1, characterised in that it comprises a spindle rotatably mounted in an axial channel formed in said piston rod, a plate secured to the lower end of said spindle and underlying the central part of said piston, vertical guide rods depending from said plate, a shutter plate vertically slidable on said guide rods and adapted, in its upper position, to close a portion of the perforations of said piston, which portion is variable according to the angular position of said shutter plate with respect to said piston, and a handle secured to the upper end of said spindle for adjusting the angular position of said shutter plate with respect to said piston. 40 45 50

4. An apparatus for physical culture substantially as described and shown on the accompanying drawings. 55

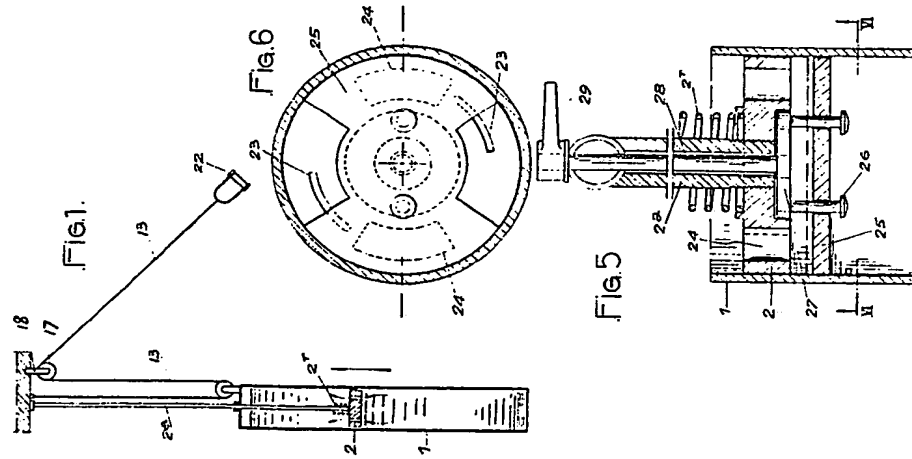
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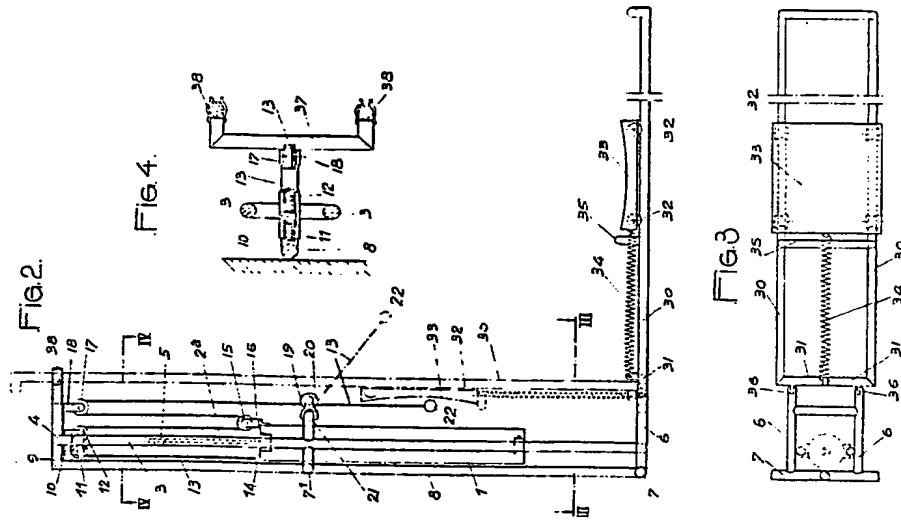
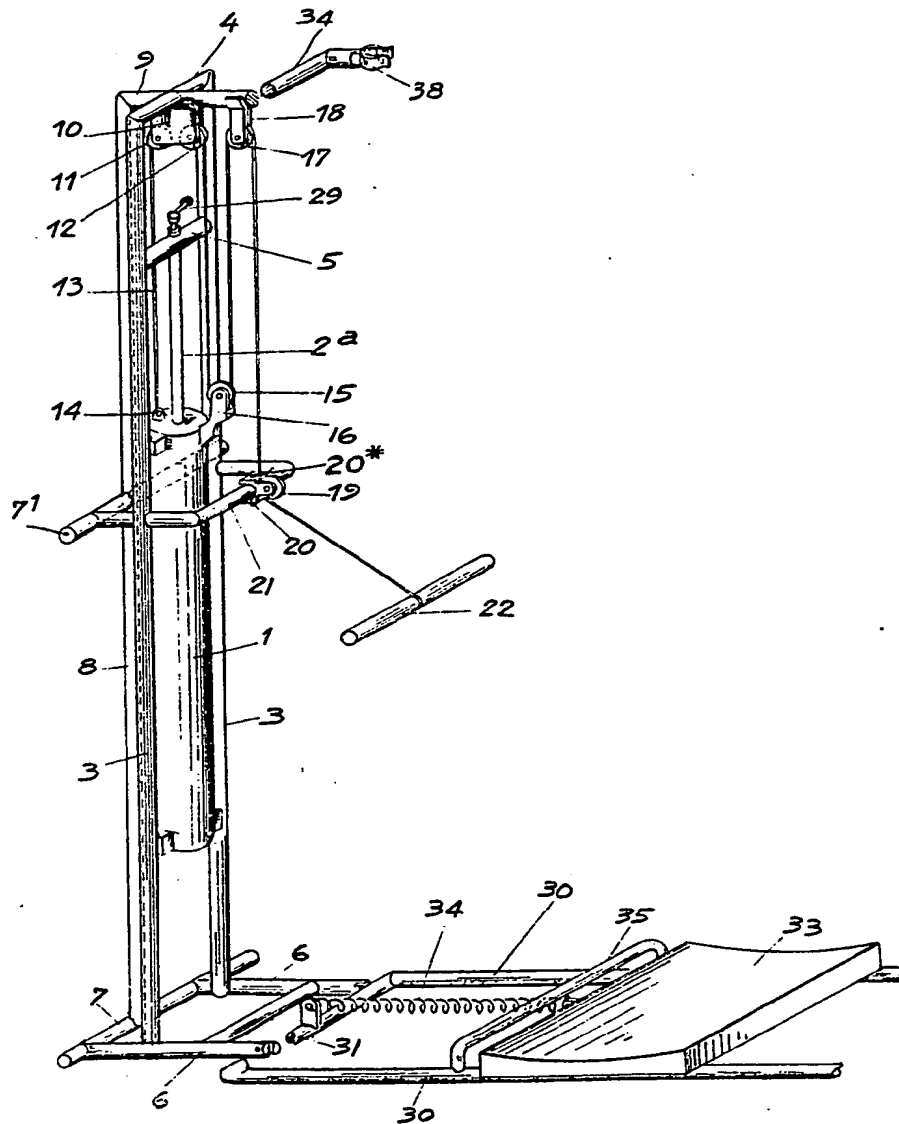


FIG. 7.



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